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Epidemiological profile of women with breast cancer in a public hospital in the Federal District of Brazil

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ABSTRACT

Introduction: In Brazil, for the 2020–2022 triennium, the estimated incidence of breast cancer in women was 66,280/year. It is the most incident type of cancer in all Brazilian regions. Several risk factors are associated with the probable etiology of breast cancer, though the complexity of the disease makes it difficult to define its main cause. **Objective:** To investigate the prevalence of factors associated with breast cancer in an outpatient population at a public hospital in the Federal District, and to verify the epidemiological profile of this population to compare the data obtained with data published in the literature. **Method:** This is a descriptive cross-sectional study, with 115 participants diagnosed with breast cancer undergoing treatment in a highly complex unit of oncology care in the Federal District between July and October 2020. Data collection was done through a questionnaire. The electronic medical record was consulted to complement the data. **Results:** The majority of women were brown, married, with an average age of 52. Hormone therapy was reported by 73.9%, early menarche by only 33.9% and late menopause by 25.2%. Most had children before the age of 30 and more than 80% breastfed. A family history of breast cancer was present in 30.4% of the sample. The consumption of alcoholic beverages was reported by more than half of the women, but the use of cigarettes was denied by the majority. The practice of some physical activity before the diagnosis of cancer was reported by 69.6%. Most were overweight or had some degree of obesity. Non-special invasive carcinoma was the most common type. **Conclusions:** This study showed that the main factors present in the sample were: advanced age, alcohol consumption, use of hormone therapy and overweight.

KEYWORDS: breast neoplasms; risk factors; health profile; women's health.

INTRODUCTION

Breast cancer represents the most common malignant neoplasm in women worldwide and is also one of the most important causes of death in this gender[1]. In Brazil, the estimate of new cases of the disease in females for the triennium 2020-2022 is 66,280 per year, which places it as the most common type of cancer in all regions[2].

For the Federal District, the estimate for the year 2020 is 730 new cases of this neoplasm in women, the second most common, second only to prostate cancer[2].

Although this disease occurs in all parts of the world, the incidence, mortality, and survival rates vary considerably between different regions of the world. The justification for these variations may lie in the different specificities of each population, such as population structure, lifestyle, genetic factors, environment, and health care[1].

Several risk factors are associated with the probable etiology of breast cancer, though, due to the complexity of the disease, it is not yet possible to specifically define the main cause. However, the genetic inheritance of the BRCA-1 and BRCA-2 genes, which are associated with high risk for the development of familial breast cancer, is a good predictor of the genetic cause of cancer[3].

The best known factors that can increase the possibility of breast malignancy include: gender, advanced age, early menarche and late-onset menopause, nulliparity, late primiparity, non-breastfeeding, sedentary lifestyle, obesity, exposure to estrogen (contraceptives and hormone replacement therapy for menopause), family history, genetic mutation, smoking, and alcohol consumption[4,5].

The clinical stage presented by patients at the time of diagnosis is a determining factor in the design of the therapeutic management. Unfortunately, in developing countries, especially those where the majority of the population has low or middle income, most cases of breast cancer are diagnosed at advanced stages due to lack of knowledge or resources[6].

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The objectives of this study were to investigate the prevalence of factors associated with breast cancer in women undergoing treatment at the outpatient clinic of clinical oncology of a tertiary hospital in the Federal District, to verify the epidemiological profile of this population and to compare the data obtained in this study with those in the literature.

METHOD

A descriptive cross-sectional study was carried out with 115 patients diagnosed with breast cancer who were undergoing treatment in a high-complexity oncology unit between July and October 2020.

Sample size was calculated using a tool available in the OpenEpi version 3.0 software. The 200 patients who underwent intravenous (IV) chemotherapy in 2019 at an outpatient level were considered, with a 95% confidence interval. Taking these values into account, the sample would need at least 110 patients in order to be representative.

For data collection, a questionnaire was applied in the form of an interview/anamnesis about socioeconomic aspects, risk, and protection factors that patients could or not have been exposed to during their lives. In order to have access to the histological type of breast cancer of the patient at the time of diagnosis and other information necessary for the study, the electronic medical record was consulted. Patients informed their consent to participate in the research by signing the Informed Consent.

The socioeconomic and epidemiological variables taken into account are: age, education, children, breastfeeding, weight and height (used to calculate the body mass index – BMI), family history, age at menarche, age at first pregnancy, use hormone therapy, physical activity, smoking, and alcohol consumption.

Inclusion criteria were: diagnosis of breast cancer, female patients, 18 years of age or more, having agreed to participate in the research, and signed informed consent. Patients disoriented in time and space, unaccompanied, who could not answer the questionnaire clearly, and patients with a history of a primary tumor other than breast cancer were excluded. In all, two patients were excluded by the first criterion.

Data were stored in Microsoft Office Excel® 2010 spreadsheets, in which a database was built for descriptive analysis through the distribution of absolute and relative frequencies, in order to generate the results in the form of graphics and tables.

This study was approved by the Research Ethics Committee of Centro Universitário do Distrito Federal (UDF) via Plataforma Brasil (approval number: 4.115.051/2020).

RESULTS

Of the total of 115 patients who participated in the survey, the mean age was 52.8 years (ranging from 28 to 80), most declared themselves brown (55.7%), 52.1% had completed high school or high education degree, 38% were married, with a family nucleus composed of one to three people (67%), family income around one to three minimum wages (41.7%), and own housing conditions (61.7%) (Table 1).

Most had their menarche in the age group considered as normal or late, and the use of contraceptives and/or hormone replacement therapies was reported by 73.9% of them. Mean age at first pregnancy was 23.5 years. Most women had menopause in the normal age group (Table 2).

More than 80% breastfed. Of them, 63.5% reported that they did it for a period equal to or longer than one year. Family history of breast cancer in up to fourth degree relatives was reported by 30.4% of the women in the study (Table 2).

Regarding alcoholism, smoking, and physical activity, the former was prevalent in 61.7%. Smoking was prevalent in less than half of the participants (44.3%). The majority (69.6%) reported that they practiced some type of physical activity before the diagnosis of breast cancer.

To interpret the participants' BMI values, the World Health Organization (WHO) classification of nutritional status was used[7].

Most patients were overweight or had some degree of obesity at the time of the interview (Figure 1). In addition to some incomplete medical records, some patients were unable to inform their weight and height. Thus, 10.4% of patients did not have their BMI calculated.

The most prevalent histological type of tumors among the study participants was non-special invasive carcinoma. This type corresponded to 96.5% of the total diagnoses. The other types of cancer identified in the sample were invasive carcinomas, special types (3.5%).

DISCUSSION

The worldwide incidence of breast cancer in black women traditionally used to be lower than in white ones, though the disease was more aggressive. From 2012 to the present day, this reality has been changing and new cases of breast cancer have an almost similar distribution between white and black women[8].

More than 50% of the women were 50 years old or older, with a mean age of 52.8 years. According to *Instituto Nacional de Câncer José Alencar Gomes da Silva* (INCA), the risk of cancer is increased in women after the age of 50 due to cumulative exposure to risk factors and biological alterations[9]. A study carried out in Bahia also showed a greater predominance of people aged 50 years old or older[10].

Of the 115 participants in the present study, 73.9% reported having used hormonal therapy with contraceptives and/or hormone replacement for menopause at some point in their lives, which emerged as an important common risk factor in the population studied. A similar study in South Africa did not associate the use of hormone therapy with breast cancer[6]. The same was observed in Özsoy et al.[11].

Table 1. Socioeconomic data of women assisted in a high-complex oncology care unit. Brasilia, 2020.

Characteristic	N	%
Age range (years)		
< 30	1	0.9
30–39	10	8.7
40–49	30	26
50–59	46	40
60–69	25	21.8
> 70	3	2.6
Mean age	52.8 years	
Ethnicity		
Yellow	11	9.6
White	25	21.7
Black	13	11.3
Brown	64	55.7
Did not declare	2	1.7
Education		
Illiterate	4	3.5
Incomplete Elementary School	34	29.6
Complete Elementary School	10	8.7
Incomplete High School	7	6.1
Complete High School	32	27.8
Incomplete High Education	7	6.1
Complete High Education	16	13.9
Postgraduate studies	5	4.3
Marital Status		
Married	44	38
Single	19	17
Divorced	40	35
Widower	12	10
Family Nucleus		
Alone	10	8.7
1–3 people	77	67
4–7 people	28	24.3
Family Income		
Less than 1 salary	27	23.5
From 1 to 3 salaries	48	41.7
From 3 to 6 salaries	26	22.6
More than 6 salaries	10	8.7
Did not know	4	3.5
Housing Conditions		
Rent	41	35.7
Owner	71	61.7
Other	3	2.6

Table 2. Biological and behavioral factors involved in the genesis of breast cancer in women treated at a highly complex oncology care unit. Brasilia, 2020.

Characteristics	N	%
Age of Menarche (years)		
≥ 9 and < 10	2	1.7
10–12	37	32.2
13–15	60	52.2
> 15	13	11.3
Did not remembe	3	2.6
Use of contraceptives and/or hormone replacement		
Yes	85	73.9
No	30	26.1
Age of first pregnancy (years)		
15–17	15	13.1
18–21	33	28.7
22–25	22	19.1
26–29	13	11.3
≥ 30	18	15.6
Nulliparas	13	11.3
Did not know	1	0.9
Breastfeeding		
Yes	96	83.5
> 1 year	61	63.5
< 1 year	35	36.5
No	19	16.5
Age of Menopause (years)		
45–49	57	49.6
50–60	29	25.2
Does not apply	29	25.2
Neoplasm in the Family		
Yes	79	68.7
Type of Cancer		
Breast	35	44.3
Ovary	2	2.5
Others	42	53.2
No	36	31.3
Alcoholism		
Former drinker	66	57.4
Yes	5	4.3
No	44	38.3
Smoking		
Former smoker	46	40
Yes	5	4.3
No	64	55.7
Practice of physical activity prior to diagnosis		
Yes	80	69.6
No	35	30.4

In the "AMAZONA III" study, both in the group of women undergoing treatment in the private network and in the group receiving care from the public network, it was observed that more than half had undergone hormonal therapy during their lifetime[12].

However, some studies claim that the risk of developing breast cancer influenced by contraceptive therapy and hormone replacement therapy can decrease or even zero over the years of its interruption. Sun et al. stated that after two years of discontinuation of contraceptives, the risk of developing cancer significantly decreases and, after 10 years, this correlation is null[5].

Given this scenario, the best thing to be done is to guide patients who use hormone therapy to adopt preventive measures, to make periodic consultations with the mastologist, and to perform tests in the presence of any suspicious changes.

The Brazilian Society of Pediatrics considers, for women: precocious puberty those that start before the age of eight; late puberty as the ones that start after 13 years of age; and normal when it occurs between 8 and 13 years of age[13]. Rojas and Stuckey bring studies that showed early menarche as a risk factor for breast cancer, as this is the moment that starts ovulation cycles, which increase women's exposure to endogenous estrogen[14].

None of the women in this study had menarche at an early age. Oliveira et al. observed most women with menarche in the normal age group[15], corroborating the data found in the study by Santos et al.[16].

Normal menopause occurs between the ages of 40 and 55 years. It is considered early when it occurs before 40 years of age and late after 55 years of age[17].

The later the menopause occurs, the longer women are exposed to breast-stimulating hormones, estrogen and progesterone. A relative risk of two was found for developing breast cancer in women who went through menopause after age 55 compared to women who went through it before age 45[14,18].

In the present study, only 25.2% of women reported menopause in the age group that includes cases considered late. A study from Paraná and another from Minas Gerais also did not observe a relationship between late menopause and the consulted cases[16,18].

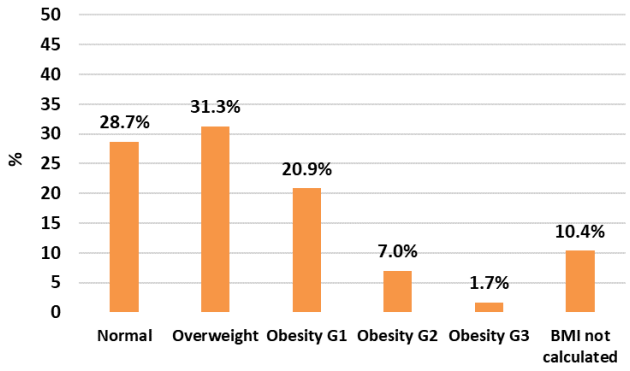


Figure 1. Classification of the participants' body mass index.

Primiparity after the age of 30 is associated with a higher risk of breast cancer, due to the likely cumulative exposure of these women to factors, cited in our study, which have the potential to change breast cells to a neoplastic configuration and which will be stimulated during pregnancy to proliferate. The relationship between nulliparity and the risk of malignant breast cancer is justified by the non-exposure to the benefits of breastfeeding, explained below[19].

The majority of women in our study had their first pregnancy before the age of 30 years. A study from Pará showed a similar result[17].

Breastfeeding is widely known for its protective potential against breast cancer due to the hypoestrogenic state during this period[14]. This protection is provided both in the pre- and postmenopause period[9]. Breastfeeding for at least a year reduces the risk of developing breast cancer by 48%[20].

In this study, 83.5% of the participating women reported having breastfed their children, most of them for a period equal to or longer than one year. Rosa et al.[12], as well as Rocha et al.[18], also reported a high number of women who breastfed.

Regarding the family history of cancer as a risk factor, the literature states that having individuals diagnosed with breast and/or ovarian cancer in the family is related to a higher risk of developing the disease in the breast throughout life due to the hereditary nature of the disease. This risk triples for first-degree relatives[14].

In our data, 30.4% of the women reported having a case of breast cancer in a relative up to the fourth degree in their family. Rocha et al.[18] and Nunes et al.[21] reported a prevalence of breast cancer in the participants' relatives of less than 30%, considering relatives up to the fourth and first degrees, respectively.

Alcohol consumption and its relationship with breast cancer is controversial, but most epidemiological studies demonstrate a consistent relationship between the daily consumption of at least 30 g of alcohol and breast cancer[14]. The consumption of this substance is related to the increase in the levels of hormones associated with estrogen, which trigger the pathway of its receptor[5].

In our sample, alcohol consumption was reported by more than 60% of women, who reported no daily use, only social. Several similar studies did not show a correlation between alcohol consumption and the investigated cases[10,12,18,19]. However, a Brazilian survey showed alcohol consumption in 57% of the sample[22], similar to the data in our study.

Recent studies have associated active and passive smoking with an increased risk of breast cancer and worse survival outcomes[14]. Mutagenic compounds from cigarette smoke have already been found in the breast fluid of non-lactating women, showing the potential for activating oncogenes in the breast through this habit[5].

In our data and in several other studies, it was observed that most women denied exposure to smoking, generating little association of cases in these studies with smoking[10,12,18,19,22].

The regular practice of physical activity is a factor that is related to the protection of women against breast cancer. It is believed that the mechanism that leads to this protection is due to the decrease in body fat, with a consequent reduction in the peripheral conversion of androgens to estrogens by the aromatase enzyme[5,14].

Most of the participants in our study reported doing some kind of physical activity before being diagnosed with cancer. However, 60.9% were overweight or had some degree of obesity at the time of the interview. Rocha et al.[18], revealing data similar to those shown here, reported that more than 70% of the participants were overweight or had some degree of obesity, which shows that obesity is an important factor common to this population.

The most prevalent histological type of breast cancer in the population of this study was non-special type invasive carcinoma (96.5%), but in a smaller quantity there were also special type invasive carcinomas (3.5%). INCA estimates that invasive carcinoma of the non-special type corresponds to the most common type of breast cancer, representing between 70 and 80% of cases. Santos et al.[16], Rocha et al.[18], and Nunes et al.[21] also showed a predominance of the non-special type in their studies.

CONCLUSION

This study showed that the main factors prevalent in the population with breast cancer studied were: advanced age, socially consuming alcohol, use of hormone therapy, and overweight.

The data emphasize the importance of medical follow-up with advancing age. Healthy routines and habits must also continue as breast cancer preventive practices, as well as the promotion of the rational use of hormonal therapies.

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AUTHORS' CONTRIBUTIONS

J.S.J.: Investigation, funding acquisition, investigation, data curation, methodology, project management, formal analysis, writing — review & editing.
F.S.: Administration, supervision, writing — review & editing.
J.V.O.L.: writing — review & editing.

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